

E-learning policy and the 'transformation' of schooling: a UK case study.

Adrian Mee [a.mee@ioe.ac.uk]

School of Mathematics, Science and Technology

Institute of Education [http://www.ioe.ac.uk]

University of London

20 Bedford Way

London, WC1H 0AL, UK

Abstract

This article provides a critical review of ICT and e-learning policy in the UK from the foundation of the National Grid for Learning in 1997 to the current time. It outlines the key strands of policy and critically reviews the economic, political and social context in which policy has been formed and implemented. E-learning policy in the UK is associated with the large scale funding of projects, major curricular intervention and a teacher development programme which seeks to address the needs of all new and serving teachers.

Perspectives on e-learning and their potential for leveraging positive change in schools equate directly to the interests of various stakeholder groups inside and outside the wider educational establishment and those who form a part of the broadly based 'community of practice' concerned with the use of ICT in schools.

Much of the debate associated with applying ICT in schools has focused on the types of technology to be used, the degree of access to technology and the manner in which it can be integrated into current organizational frameworks.

This article seeks to focus attention not on the technologies which have flowed into UK schools but on the issues which have comprised the policy environment and have significantly impacted on the degree to which e-learning initiatives have achieved the 'transformation' predicted when the foundations of the National Grid for Learning were laid.

Keywords

policy, transformation, e-learning, schools, UK.

Topics

- Introduction
- A global and European perspective
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- Programme scale
- Issues of professional autonomy
- The macro-political environment
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- Ten years of 'transformation'?
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Introduction

In 1997 the incoming New Labour government announced a major drive to 'transform' education in the UK through a sustained and comprehensive programme of technology related initiatives (DFEE, 1997). The collective title of the 'National Grid for Learning' encompassed projects and initiatives seeking to improve the quantity of technology available in schools, enhance connectivity to the Internet, promote ICT related training for the education workforce and to ensure that the curriculum encouraged the use of ICT to support teaching and learning.

This article aims to provide a critical review of the progress of this initiative outlining its achievements and shortcomings. The approach taken is a thematic one focussing on the relationship between e-learning policy and the broader educational agenda and the wider political and economic context in which policy was formed and implemented. This thematic approach is supplemented by a discussion of the UK e-learning policy time-line shown in Figure 1.

The article seeks to draw out the fundamental issues in relation to the effectiveness of the National Grid rather than to list and review each of the bewildering array of projects and initiatives encompassed within it. Indeed, the article suggests that the sheer number and scope of the projects and the lack, at least in the early years, of a clear and co-ordinated strategic framework is partially responsible for the limited impact reported.

The founding principles which shaped the conception of the National Grid and the philosophies which directed the manner of its implementation were largely political being inextricably linked with marketization, the 'third way' and neo-liberalism. Whilst the analysis inevitably scrutinizes the political context it is worthy of note that the application of technology to education in the UK is not an issue of party political contention with both major parties taking a positive stance on the issue.

A global and European perspective

The emergence of the 'Knowledge Economy' as a global phenomenon relocates the focus of economic competitiveness from industrial to 'human capital' (Becker, 1975). The consequence of this global economic restructuring is to place ever greater emphasis on the need for effective education as a form of national investment.

As the new economic realities and the challenges of an economy based on information and the capacity to

process, store and apply it are recognized, governments worldwide have sought to engage with the opportunities of emerging digital technologies. The potential of these same technologies to provide a solution to the educational supply problem has been recognized and many governments have invested heavily in promoting ICT as a tool to lever educational output. As developed economies have looked to ICT supported learning to bolster economic advantage, many less economically developed nations have looked towards the educational potential of ICT as a means to renegotiate their role within the global division of labour and many have sought to develop e-learning strategies with varying levels of success (Selwyn, 2002).

The scale of change required to provide a system of schooling which meets the needs of the economy of the 21st century are seen to go beyond incremental change and absorption of technology into the current curriculum, organizational structures and pedagogical practices of the school. The OECD suggests that a range of global factors are combining to make the current 'bureaucratic' models of schooling obsolete and goes on to suggest that possible futures can be described by the radical options of 'de-schooling' or 're-schooling' (OECD, 2002).

In the UK, the National Grid for Learning was launched amid expectations of changes described as "transformation" (DfEE, 1997). In addition to the emergence of the knowledge economy the OECD (2002) identifies issues of social justice and inequality, changes in community and family life and global demographics as being key drivers which require radical changes to the way young people are educated.

In addition to social and cultural factors the application of technology in the field of education is influenced by political factors including the growing trend towards devolved management and local decision making (Caldwell, 1992) although the central funding programmes used in many countries raises a potential policy paradox where the principles of subsidiarity clash with the need to achieve economies of scale through government direction (Mee, 2007).

Clearly national governments are constrained by economic imperatives and influenced by social and cultural change when constructing e-learning policy in relation to schools and it may be considered if the research and debate around such factors has been as extensive or influential as those addressing the nature and quantity of technology finding its way into classrooms.

Within the European Union many individual states have implemented strategies to develop the use of ICT in schools driven by an economic need to maintain competitiveness and in support of social justice. Collectively the eEurope plan sought to encourage all member states to ensure that all EU schools should have Internet access by 2001 and that teachers should be trained to use ICT (OECD, 2001). Whilst progress has been made with respect to connectivity goals; those countries with relatively large rural populations have encountered difficulties.

As in the UK pupil/computer ratios have fallen across Europe but still significant disparities remain between member states with more wealthy countries achieving higher levels of computer access in schools.

Whilst the UK's National Grid and its large scale expenditure on computers for schools has achieved a considerable fall in pupil/computer it still remains comparable with other leading Western European nations (Eurydice, 2004) as shown in Table 1.

Table 1. Lowest EU pupil/computer ratios 2004

EU lowest pupil/computer ratios						
Lithuania	Austria	Denmark	England	Sweden	Finland	Luxembourg
4.9	7.1	7.8	7.9	8.1	8.5	9.3

Further analysis of EU school infrastructure data drawn from the OECD, PISA 2000 database shows marked disparities across Europe mirroring GDP per capita with many Eastern European countries having ratios in excess of 20 and variations between schools within countries demonstrating inequalities between institutions. Whilst the National Grid programme has only allowed the UK to keep pace with other leading EU members it has ensured that UK school's access to technology varies significantly less than many other EU member states.

The UK e-learning policy timeline

The UK has a long history of seeking to develop the use of ICT in schools but the launch of the National Grid for Learning in 1997 was different in three crucial respects, these being scale, the integrated approach to infrastructure and human resources and thirdly the political philosophy of the "third way" and marketization which underpins the principles of Connecting the Learning Society (DfEE, 1997) which opened the consultation on this initiative.

The roll-out of the National Grid for Learning programme is shown in Figure 1. Following the publication of the Stevenson Report (1997), the newly elected New Labour government consulted on its vision for the National Grid. The consultation was rapidly followed by a raft of ICT projects including the Pathfinder Schools project which stated as one of its key objectives the collection of data to support effective policy making regarding ICT in schools. Concurrently with this project was the New Opportunities Fund training program offering ICT training to all serving teachers and a major evaluation study, ImpaCT2. In 2002 the Test Bed project was launched, again to investigate how ICT might raise achievement and promote educational reform. As Figure 1 shows, concurrent with these trial projects, funding directly to schools caused the pupil computer ratio in schools to fall. The period also saw a gradual increase in teacher confidence.

Only in 2003, six year after the initial consultation on the National Grid for Learning was the first significant attempt made to assemble a coherent strategy to lend direction to the host of projects and initiatives already underway and only eight years into the decade of 'transformation' did an explicit policy document emerge encompassing the strategy of e-learning in schools. 'Harnessing Technology: Transforming Learning and Children's Service' emerged in 2005 as the only explicit policy document from central government encompassing e-learning strategy within the wider educational priorities of the UK.

Clearly the statistical evidence suggests increased access and teacher confidence but these were achieved at significant cost and have not led to the 'transformation' hoped for. This raises questions regarding the need for strategies to be formulated at the beginning rather than at the end of major programmes of investment if the full benefits are to be realised.

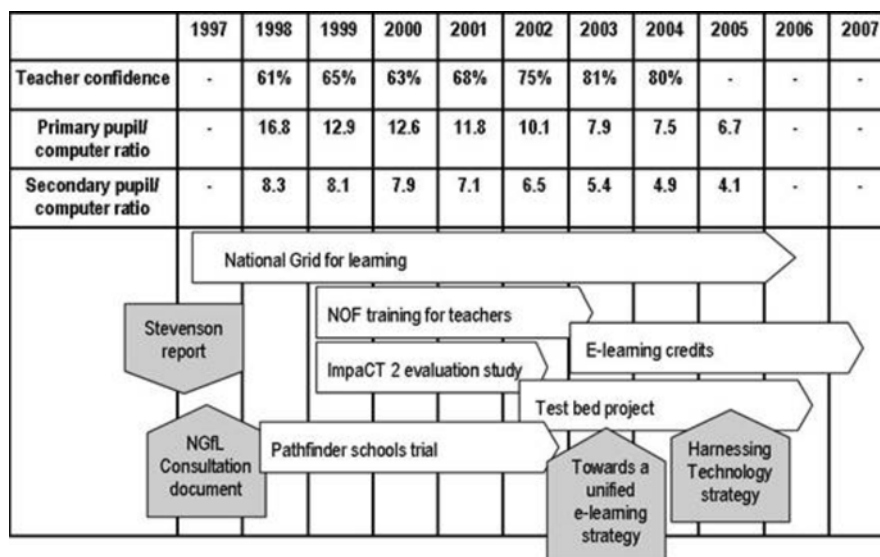


Figure 1. E-learning policy timeline, infrastructure trends and teacher confidence.

Programme scale

The scale of the NGfL dwarfed previous initiatives and even the Stevenson report (1997) suggested that the task of developing an adequate ICT infrastructure in schools would demand a level of resourcing which most governments might consider too costly. Previous ICT related initiatives were largely pilot projects aiming at proof of principle rather than real attempts to significantly lever major educational change. The main government thrust previous to the grid came in 1982/3 when central government funded one computer for every primary school (Abbott, 2001).

Between 1998 and 2005 the pupil/computer ratio in UK schools fell dramatically largely funded by direct infrastructure grants. In primary the ratio fell from 16.8 to 6.7 and in secondary from 8.3 to 4.1 (BECTA, 2005). This ring fenced funding flowed directly to schools from government as part of the National Grid for Learning Programme and other associated projects.

Further, in addition to grants at institutional level to purchase hardware, the newly formed regional grids made rapid progress in developing the broadband infrastructure linking schools with the rapidly growing Internet.

Despite the unequivocal evidence that the NGfL significantly increased the amount of hardware in schools, a range of side effects has emerged in relation to this rapid, centrally funded expansion. Schools receiving year on year capital grants to support the development of increasingly complex and extensive networks soon realized that their growing infrastructures made significant demands on the school's delegated budget for technical support, training and upgrades etc. and the term 'total cost of ownership' entered many school ICT strategies as a factor in planning (Scrimshaw, 2002).

A further issue in relation to school level planning arose as a consequence of the regulations surrounding the way in which ICT capital grants were spent with some specifying particular technologies and even the subjects in which the technology should be deployed. This level of direction has led to the suggestion that this has reduced the capacity of school management teams to make strategic decisions about the nature and quantity hardware they require (PricewaterhouseCoopers, 2004). Accompanying the central control of capital grants for ICT the government pursued its policy of delegation of decision-making to school level for other issues. Where leadership teams were encouraged to develop informal skills of cost-benefit analysis in terms of the deployment of staff and other resources in order to plan for maximum gain from each investment, the deployment of ICT was largely centrally determined by a prescriptive top-down framework. It is notable that whilst a number of impact studies have been undertaken e.g. ImpaCT2 (Harrison, 2002) no comparable cost-effectiveness study has investigated the degree to which similar increases in attainment might have been achieved at less cost by means other than ICT.

Issues of professional autonomy

Parallel to the challenges to school based managerial autonomy posed by a top-down funding approach, the programme also challenged the control of teachers over pedagogy and the curriculum.

This second major difference between the NGfL and previous initiatives is its association with major curriculum change targeted at embedding ICT within the curriculum and in classroom practice in all subjects.

As National Curriculum subjects were supported and encouraged in applying ICT for teaching and learning through a range of content provided by the Regional Grids, the General Teaching Requirements – regulations specifying curriculum delivery requirements which must be addressed in all subjects, placed an obligation on teachers to use ICT and again this top-down approach has generated some unwanted side effects. The capacity of teachers to apply ICT in the classroom rests on the foundations laid in initial teacher education where the standards for Qualified Teacher Status specify that new teachers must demonstrate the capacity to use ICT to support subject pedagogy and ICT skills are tested by the requirement for trainees to pass an on-line test. However research undertaken by the author shows that whilst 93% of trainees demonstrate a positive attitude to ICT in teaching their subjects a significant number expressed a degree of concern that ICT was too often presented as a panacea and that many felt obliged to use ICT where their professional judgment suggested that relatively little benefit was to be gained (Mee, 2005). This study also shows that whilst the respondents were positive about the use of ICT in their teaching many resented being obliged to use it.

The above evidence would indicate that a policy framework containing an element of compulsion may lead to a negative reaction stemming from concerns regarding professional autonomy rather than concerns

about the use of technology itself. Certainly it could be claimed that professions require a framework which regulates the relationship between its members and the wider public but in the case of ICT use in schools it is unclear the degree to which policy should direct teachers' work at classroom level and the decision-making process at school level. Given the trend towards local decision making in the state education sector, the expressed belief in choice and the degree of confidence that ICTs are indeed 'powerful tools,' the logical conclusion is that compulsion and central direction should be unnecessary.

However, this issue of teacher resistance remains contested with Michael Barber, head of the UK Government's Cabinet Office Delivery Unit seeing the need to 'reconceptualise teaching' and 'change professional attitudes' as a major challenge (OECD, 2003).

The macro-political environment

This section explores the significance of changing political perspectives on the underpinning principles of e-learning policy in the UK, both explicitly and implicitly.

The incoming government in 1997 broke with the previous policy polarities of state control or market and choice in a manner which sought to apply the benefits of the market in the arena of public services but regulated by a government framework under the banner of a 'third way' (Whitty, 2002). This model may be seen as a response to the neo-liberalism of the previous government but one which sought to avoid a return to a previous era of a centrally state-funded and controlled education system (Brown, 2003). The government's commitment to ensuring that e-learning would be developed through the involvement of the commercial e-learning sector rather than directly by the state and that such a development was a synthesis of educational aims and of economic ones can be seen from the following quotes drawn from the NGfL consultation document.

"By pioneering this market at home, we aim to create markets for our companies abroad."
p1.

The programme aims to.....

"Stimulate public/private partnership, bringing together the best of private sector creativity and the highest standards of public service."

"Ensure that nothing is provided at public expense, which otherwise could be provided commercially." p3.

DfEE 1997

This approach of combining the commercial and public sector consisted of the creation of a quasi-market for e-learning hardware, software and content with capital funding from central government acting as pump-primer. Such a system which draws on the "private sector creativity" and "standards of public service" as mentioned above, presents an attractive alternative. However, the translation of principle into action has proven to be a challenge which has eluded policy makers and we find an emerging recognition that the current policy matrix is failing to produce the dramatic changes hoped for in the earlier days of the programme (Pittard, 2004). Certainly e-learning policy in the UK has supported some degree of improvement in student learning (Condie, 2007) but advances have been piecemeal and have not approached the 'transformation' which was predicted and which could form the foundation of a system of schooling fully equipped to take advantage of the full range of affordances offered by digital technologies (OECD, 2001). Further, a range of studies have questioned whether the output measures used are appropriate if we are to achieve a broader understanding of impact which transcends examination and test scores (Twining, 2006).

In the following section we seek to outline specific cases which serve to illustrate the factors which have led the UK to the critical juncture at which it now finds itself. It further seeks to outline the relative merits of a strategy of 'more of the same' or 'a change of direction'.

The teacher as innovator

Early studies addressing the issue of the relationship between teachers and the educational use of computers suggests a degree of resistance to integrating technology into routine pedagogic practice (Cooper, 1990). It is also suggested that a wider framework of resistance encompasses teacher's reluctance to engage with externally imposed change which potentially involves a remediation of the relationships between teachers and learners and a model based on authority and status (Gitlin, 1995). Even more fundamental issues of the tensions between digital technologies and the processes and purposes of schooling are explored in depth by Cuban (2001).

Between the early 1990s and present the computer has graduated from specialist tool to domestic appliance with the Internet emerging as an everyday tool associated with entertainment and routine access to information. The appearance of the home PC has coincided with a greater acceptance of the place of digital technologies in the classroom.

Since 1997 and the foundation of the National Grid for Learning UK teachers have had increased access to classroom technology, training in its use as part of a national programme which offered all serving teachers access to ICT pedagogical training and have been encouraged and required to use ICT in their teaching. The general shift towards a more positive attitude to technology has occurred within a framework which has shaped the way teachers have adopted technology in their teaching and despite early problems with training teachers report growing confidence (see Figure 1).

This increase in the use of classroom technology has occurred concurrently with growing accountability and support structures implemented by the UK government with the aim of improving standards of pupil achievement. The production and dissemination by government agencies of recommended schemes of work, many including micro-planning of classroom resources and even lesson plans in conjunction with the increased monitoring of teaching by external inspectors, school management, performance targets and the strengthening of the concept of 'best practice' have combined to create an environment which facilitates conformity rather than innovation in classroom practice.

Hargreaves, head of the British Educational Communications and Technology Agency, an agency of the UK government's Department for Education and Skills suggests that whilst central government may be justified in intervention clear limits need to be established.

"..... I am sympathetic to those governments, like my own, which have intervened in the education service from a conviction that externally imposed reform was necessary and that educational professionals could not be trusted to make the necessary improvements if left to themselves. But there are limits to what can be imposed. Increasingly, the task of governments will be to give to the professionals, first, a clear responsibility for the creation and transfer of the knowledge and skill that will transform both educational practices and institutions to meet the demands of knowledge economies....."

Hargreaves (2000) p4

From the above it is clear that teachers have a role to play in pursuing innovation in the application of classroom technology but the tight accountability structures act to constrain the willingness to engage with change and push teachers and schools themselves towards a culture of innovation aversion (Aldbury, 2003).

Curriculum change

The UK's National Curriculum originally defined in 1988 was part of one of the most significant acts of educational reform in the UK schooling system and it specifies the entitlement curriculum to be taught to pupils in UK state-funded schools. This curriculum, defined by programmes of study specifying the knowledge and skills pupils are to be taught, is divided into clearly defined and familiar subjects. Since its foundation the curriculum has undergone a major review and a number of minor amendments but the 'subject' remains constant as a clearly defined body of knowledge and forms the core conceptualization of what pupils are to learn. Whilst a 'National Curriculum' legally defined by government and policed by an inspection system was justified as supporting an entitlement for all pupils it was implemented against a further and possibly contradictory policy objective of greater parental choice (Whitty, 1989).

Such a clear and rigid delineation between subjects and a compartmentalized knowledge-based curriculum are suggested as central barriers to the application of e-learning (OECD, 2002). Over the last decade the application of ICT within the National Curriculum has focused on clearly and explicitly delineating for practitioners the opportunities for applying technology in the 'delivery' of the existing subject-based curriculum, this enforced by a statutory requirement to use ICT in the teaching of all subjects.

Whilst inspection evidence reports improvements in the use of ICT to support the subject-based curriculum (OFSTED, 2004) this indicates an incremental change rather than the 'transformation' hoped for when laying the foundations of the National Grid for Learning and which still forms the central theme of UK educational policy (DfES, 2005).

'Personalization' of learning involving flexibility and choice in terms of curriculum and mode of access for the learner is a central theme in the UK's e-learning strategy and any advance in this direction must be associated with an element of de-regulation of the curriculum. There are a range of signs that such de-regulation is emergent with the creation of greater freedom to tailor the curriculum offered to local circumstances. This is a central theme of the current government's City Academy programme which creates new schools outside the normal framework of state control, partly funded by private capital and focused on leveraging improvements in pupil learning through technical and organisational innovation.

The increasing availability of ICT infrastructure and deregulation of the curriculum would seem to meet the requirements for reaping fully the benefits of e-learning as specified by the OECD (2001) but the involvement of the private sector raises major questions regarding where the locus of control over the curriculum should lie. The tight curriculum framework of the early years of the National Grid for Learning led the commercial sector to develop resources tightly tailored to the compulsory curriculum, however where such a framework is removed the danger emerges of a curriculum defined to a significant degree by educational content providers. Already considerable conflict has arisen over access to and control over the schools e-learning market when the BBC sought to develop a range of free curriculum content (Buckingham, 2003). If policy is not to define the curriculum then a debate is required into the nature of controls and regulation required to ensure that the curriculum does not become driven by commercial interests.

Ten years of transformation?

In reviewing UK e-learning development over a decade it is important to avoid a deficit approach and to recognize that much has been achieved and that strategies eventually become prone to diminishing returns.

Certainly both teachers and pupils in school have witnessed the dramatic increases in availability of hardware and the deployment of a range of novel technologies and services which may not have occurred without this concerted effort. However it is unclear how further increasing the number of computers in schools will support higher pupil achievement and consideration must be given to the extent to which schools, left to make their own purchasing decisions, would support the commercial hardware market which has grown up around government capital funding. Referring back to the previously stated policy intention of growing the e-learning market we may consider that whilst the demand for hardware and software has grown, can the market be said to be healthy where it rests on government capital grants?

A central issue for future research is the manner in which policy with respect to e-learning is formulated and implemented. Haddad (1995) suggests that the policy process consists of the stages of:

1. Formulation
2. Evaluation
3. Adoption
4. Implementation
5. Assessing Impact
6. Adjustment
7. New policy cycle

Certainly such a model is of necessity a theoretical abstraction and a national programme encompassing many projects and initiatives will not map directly to such a rigidly linear path. However the timeline offered above indicates significant juxtaposition of stages with major projects and resourcing initiatives being undertaken before an encompassing strategy had been formulated.

Conclusions

We have seen that central to e-learning policy in the UK is the belief that global economic trends make necessary changes to our education system and that such changes will need to be technologically based and radical rather than incremental. It is worthy of note that these assumptions are not unchallenged (Clegg, 2005).

A concerted programme of e-learning focused school initiatives, well funded and carefully targeted at measurable outcomes has led to increased availability of technology in schools. The curriculum has been amended to require and support teaching and learning through ICT and a set of measures to ensure that new and serving teachers have the knowledge and skills to apply ICT in their classrooms has been implemented. All of the above has led to what could at best be described as incremental accommodation of educational technologies within existing organizational frameworks and even this being highly variable between schools.

In searching for the reason why we have seen piecemeal and incremental change rather than the predicted 'transformation' we look towards the broader policy environment and the impact this has had on schools and teachers' capacity to innovate. Calls for radical innovation and the development of new approaches to learning made possible by digital technologies have occurred alongside a tight standards and target driven agenda. This agenda was based on increasingly centrally defined models of 'good practice', accountability system and scrutiny not only through the publishing of data on school examination output but on internal and external scrutiny of actual classroom teaching. In such a high risk environment it can be expected that a strategy of compliance and risk aversion have become seen as the main barriers to change.

An analysis of the UK case provides clear evidence that top-down approaches to technological innovation in the field of education can lead to an enhancement of current practice in the classroom and making administration of existing school systems more efficient. However if 'transformation' is to remain the aim, then strategies to reward innovation, even failed innovation, need to be considered to supplant a system of direction and control.

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